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cont

wire bonds 506. FIG. 12 illustrates a bottom view of a substrate 104, with heat spreader 504 attached. The plurality of solder balls 106 are attached to substrate 104 outside an outer dimensional profile of heat spreader 504.

Please substitute the current version of paragraph [0053] with the following paragraph:

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FIG. 5 illustrates a cross-sectional view of a portion of a die-up tape BGA package 500, according to an embodiment of the present invention. BGA package 500 includes IC die 102, substrate 104, plurality of solder balls 106, one or more wire bonds 108, encapsulant 116, a stiffener or ring 502, a heat spreader 504, and one or more ground wire bonds 506. FIG. 6 illustrates a top view of die-up tape BGA package 500 (encapsulant 116 not shown).

In the Claims:

Please cancel ~~claims~~ 1, 2, 14, 15, 19, 33, and 34 without prejudice or disclaimer.

Please amend claims 3-13, 16-18, 20, and 35 as follows:

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3. (Amended) The package of claim 38, wherein an outer profile of said heat spreader overlaps with an inner profile of said ring shaped stiffener.

4. (Amended) The package of claim 38, wherein said second surface of said heat spreader is plated with solder that allows said second surface of said heat spreader to be surface mounted to soldering pads on the PCB.

5. (Amended) The package of claim 38, wherein said substrate has a window opening that is open at said first surface and said second surface of said substrate.

6. (Amended) The package of claim 5, further comprising:

an integrated circuit (IC) die that is mounted to said first surface of said heat spreader and is accessible through said window opening.

7. (Amended) The package of claim 6, wherein said IC die has a surface that includes a contact pad, wherein said package further comprises:

a wire bond that couples said contact pad to a corresponding metal trace on said first surface of said substrate.

8. (Amended) The package of claim 6, wherein said IC die has a surface that includes a contact pad, wherein said package further comprises:

a wire bond that couples said contact pad to said first surface of said heat spreader.

9. (Amended) The package of claim 8, wherein said second surface of said heat spreader is coupled to a ground potential of the PCB.

10. (Amended) The package of claim 38, wherein said substrate is a tape substrate.

11. (Amended) The package of claim 38, further comprising:
an integrated circuit (IC) die that is mounted to said first surface of said substrate.

12. (Amended) The package of claim 11, wherein said IC die has a surface that includes a contact pad, wherein said package further comprises:
a wire bond that couples said contact pad to a corresponding metal trace on said first surface of said substrate.

13. (Amended) The package of claim 11, wherein said IC die is mounted to said first surface of said substrate in a flip chip configuration, wherein a conductive bump on an active surface of said IC die is connected to a conductive pad on said first surface of said substrate.

16. (Amended) The package of claim 13, further comprising:
a second heat spreader attached to a non-active surface of said IC die and said second surface of said ring shaped stiffener.

17. (Amended) The package of claim 13, further comprising a via located proximate to said mounted IC die that extends through said substrate from said first surface of said substrate to said second surface of said substrate, wherein said via is filled with a conductive material to couple said conductive bump to said heat spreader.

18. (Amended) A method of assembling a ball grid array (BGA) package, comprising the steps of:

receiving a substrate having a plurality of contact pads on a first surface electrically connected through the substrate to a plurality of solder ball pads on a second surface of the substrate;

attaching a first surface of a heat spreader to the second substrate surface;

attaching a ring shaped stiffener that is centrally open in a first surface and a second surface to the first surface of the substrate;

configuring a second surface of the heat spreader to be coupled to a printed circuit board (PCB); and

attaching a plurality of solder balls to the second substrate surface.

20. (Amended) The method of claim 18, wherein said heat spreader attaching step comprises the step of:

attaching a first surface of the heat spreader to the second substrate surface, wherein an outer profile of the heat spreader overlaps with an inner profile of the ring shaped stiffener.

35. (Amended) The method of claim 18, further comprising the step of:

attaching a second heat spreader to a non-active surface of the IC die and a second surface of the ring shaped stiffener.

Please add the following new claims 38-68:

38. (New) A ball grid array (BGA) package, comprising:

a substrate having a plurality of contact pads on a first surface electrically connected through said substrate to a plurality of solder ball pads on a second surface of said substrate;

a heat spreader that has a first surface and a second surface, wherein said first surface of said heat spreader is attached to said second surface of said substrate; and

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a ring shaped stiffener being centrally open in a first surface and a second surface, wherein said first surface of said ring shaped stiffener is attached to said first surface of said substrate;

wherein said second surface of said heat spreader is capable of being coupled to a printed circuit board (PCB).

39. (New) The package of claim 38, wherein said heat spreader comprises at least one metal.

40. (New) The package of claim 39, wherein said at least one metal includes copper.

41. (New) The package of claim 39, wherein said at least one metal includes aluminum.

42. (New) The package of claim 38, wherein said heat spreader is substantially planar.

43. (New) The package of claim 38, further comprising:

a thermally conductive adhesive that attaches said first surface of said heat spreader to said second surface of said substrate.

44. (New) The package of claim 38, further comprising:
a thermally conductive adhesive that attaches said first surface of said ring shaped stiffener to said first surface of said substrate.
45. (New) The package of claim 38, wherein said ring shaped stiffener comprises at least one metal.
46. (New) The package of claim 45, wherein said at least one metal includes copper.
47. (New) The package of claim 45, wherein said at least one metal includes aluminum.
48. (New) The package of claim 38, further comprising:
a plurality of solder balls attached to said plurality of solder ball pads.
49. (New) The package of claim 38, wherein an outer surface of said ring shaped stiffener is flush with an outer edge of said substrate.
50. (New) The package of claim 6, further comprising:
an encapsulating material that fills a cavity formed by said ring shaped stiffener, said window opening, and said first surface of said heat spreader to encapsulate said IC die.
51. (New) The package of claim 11, further comprising:

an encapsulating material that fills a cavity formed by said ring shaped stiffener and said first surface of said substrate to encapsulate said IC die.

52. (New) The package of claim 16, wherein said second heat spreader is attached to said second surface of said ring shaped stiffener with a thermally conductive adhesive material.

53. (New) The package of claim 16, wherein said second heat spreader is attached to said non-active surface of said IC die with a thermally conductive adhesive material.

54. (New) The package of claim 16, wherein said second heat spreader comprises at least one metal.

55. (New) The package of claim 54, wherein said at least one metal includes copper.

56. (New) The package of claim 54, wherein said at least one metal includes aluminum.

57. (New) The package of claim 16, wherein said second heat spreader is substantially planar.

58. (New) The package of claim 17, wherein said conductive material filling said via thermally couples said conductive bump to said heat spreader.

59. (New) The package of claim 17, wherein said conductive material filling said via electrically couples said conductive bump to said heat spreader.

60. (New) A ball grid array (BGA) package, comprising:

a substrate having a plurality of contact pads on a first surface electrically connected through said substrate to a plurality of solder ball pads on a second surface of said substrate, wherein said substrate includes a window opening that is open at said first surface and said second surface of said substrate;

a heat spreader that has a first surface and a second surface, wherein said first surface of said heat spreader surface is attached to said second surface of said substrate; and

an IC die mounted to said first surface of said heat spreader that is accessible through said window opening;

wherein said second surface of said heat spreader is capable of being coupled to a printed circuit board (PCB).

61. (New) The package of claim 60, wherein said heat spreader comprises at least one metal.

62. (New) The package of claim 61, wherein said at least one metal includes copper.

63. (New) The package of claim 61, wherein said at least one metal includes aluminum.

64. (New) The package of claim 60, wherein said heat spreader is substantially planar.

65. (New) The package of claim 60, further comprising:

a thermally conductive adhesive that attaches said first surface of said heat spreader to said second surface of said substrate.

66. (New) The package of claim 60, wherein said IC die has a surface that includes a contact pad, wherein said package further comprises:

a wire bond that couples said contact pad to said first surface of said heat spreader.

67. (New) The package of claim 60, further comprising:

a plurality of solder balls attached to said plurality of solder ball pads.

68. (New) The package of claim 60, wherein said substrate is a tape substrate.
